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#13

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/689,159A

DATE: 12/31/2002

TIME: 14:09:11

Input Set : A:\Sequence Listing (ASCII copy) - US7.txt

Output Set: N:\CRF4\12312002\I689159A.raw

3 <110> APPLICANT: St. George-Hyslop, Peter H  
 4 Rommens, Johanna M  
 5 Fraser, Paul E  
 7 <120> TITLE OF INVENTION: GENETIC SEQUENCES AND PROTEINS RELATED TO ALZHEIMER'S  
 DISEASE  
 9 <130> FILE REFERENCE: 1034/1F808US7  
 11 <140> CURRENT APPLICATION NUMBER: US 09/689,159A  
 12 <141> CURRENT FILING DATE: 2000-10-12  
 14 <150> PRIOR APPLICATION NUMBER: US 08/509,359  
 15 <151> PRIOR FILING DATE: 1995-07-31  
 17 <160> NUMBER OF SEQ ID NOS: 185  
 19 <170> SOFTWARE: PatentIn version 3.1  
 21 <210> SEQ ID NO: 1  
 22 <211> LENGTH: 2791  
 23 <212> TYPE: DNA  
 24 <213> ORGANISM: Homo sapiens  
 26 <220> FEATURE:  
 27 <221> NAME/KEY: misc\_feature  
 28 <222> LOCATION: (1)..(2791)  
 29 <223> OTHER INFORMATION: where n may be either a or g or c or t/u, unknown or other  
 32 <400> SEQUENCE: 1  
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 W--> 35 gaaggaacct gagctacgag ccgcggcggc agcggggcgg cggggnaagc gtatacctaa 120  
 37 tctgggagcc tgcaagtgc aacagccttt gcggtcctta gacagcttgg cctggaggag 180  
 39 aacacatgaa agaaagaacc tcaagaggct ttgttttctg tgaaacagta tttctataca 240  
 41 gttgctccaa tgacagagtt acctgcaccg ttgtcctact tccagaatgc acagatgtct 300  
 43 gaggacaacc acctgagcaa tactgtacgt agccagaatg acaatagaga acggcaggag 360  
 45 cacaacgaca gacggagcct tggccaccct gagccattat ctaatggacg accccagggt 420  
 47 aactcccggc aggtggtgga gcaagatgag gaagaagatg aggagctgac attgaaatat 480  
 49 ggcgccaagc atgtgatcat gctctttgtc cctgtgactc tctgcatggt ggtggtcgtg 540  
 51 gctaccatta agtcagtcag cttttataacc cggaaggatg ggcagctaat ctatacccca 600  
 53 ttcacagaag ataccgagac tgtgggccag agagccctgc actcaattct gaatgctgcc 660  
 55 atcatgatca gtgtcattgt tgtcatgact atcctcctgg tggttctgta taaatacagg 720  
 57 tgctataagg tcatccatgc ctggcttatt atatcatctc tattgttgct gttctttttt 780  
 59 tcattcattt acttggggga agtggtttaa acctataacg ttgctgtgga ctacattact 840  
 61 gttgctactc tgatctggaa tttgggtgtg gtgggaatga tttccattca ctggaaaggt 900  
 63 ccacttcgac tccagcaggc atatctcatt atgattagtg ccctcatggc cctggtgttt 960  
 65 atcaagtacc tccctgaatg gactgcgtgg ctcatcttgg ctgtgatttc agtatatgat 1020  
 67 ttagtggtctg ttttgtgtcc gaaagggtcca cttcgtatgc tgggtgaaac agctcaggag 1080  
 69 agaaatgaaa cgctttttcc agctctcatt tactcctcaa caatggtgtg gttggtgaat 1140  
 71 atggcagaag gagacccgga agctcaaagg agagtatcca aaaattccaa gtataatgca 1200  
 73 gaaagcacag aaaggagtc acaagacact gttgcagaga atgatgatgg cggtttcagt 1260  
 75 gaggaatggg aagcccagag ggacagtcac ctagggcctc atcgctctac acctgagtca 1320  
 77 cgagctgctg tccaggaact ttccagcagt atcctcgctg gtgaagacct agaggaaagg 1380

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79 ggagtaaaac ttggattggg agatttcatt ttctacagtg ttctggttgg taaagcctca 1440
81 gcaacagcca gtggagactg gaacacaacc atagcctgtt tcgtagccat attaattggt 1500
83 ttgtgcctta cattattact ccttgccatt ttcaagaaag cattgccagc tcttccaatc 1560
85 tccatcacct ttgggcttgt tttctacttt gccacagatt atcttgtaca gccttttatg 1620
87 gaccaattag cattccatca attttatatc tagcatatit gcggttagaa tcccatggat 1680
89 gtttcttctt tgactataac caaatctggg gaggacaaag gtgattttcc tgtgtccaca 1740
91 tctaacaaag tcaagattcc cggtcgact tttgcagctt ccttccaagt cttcctgacc 1800
93 accttgact attggacttt ggaaggagggt gcctatagaa aacgattttg aacatacttc 1860
95 atcgcagtgg actgtgtcct cggtgcagaa actaccagat ttgagggacg aggtcaagga 1920
97 gatatgatag gcccggaagt tgctgtgccc catcagcagc ttgacgcgtg gtcacaggac 1980
99 gatttcactg acactgcgaa ctctcaggac taccggttac caagaggtta ggtgaagtgg 2040
101 tttaaaccaa acggaactct tcatcttaaa ctacacgttg aaaatcaacc caataattct 2100
103 gtattaactg aattctgaac ttttcaggag gtactgtgag gaagagcagg caccagcagc 2160
105 agaatgggga atggagagggt gggcaggggt tccagcttcc ctttgatttt ttgctgcaga 2220
107 ctcatccttt ttaaatgaga cttgttttcc cctctctttg agtcaagtca aatatgtaga 2280
109 tgcctttggc aattcttctt ctcaagcact gacactcatt accgtctgtg attgccattt 2340
111 cttcccaagg ccagtctgaa cctgagggtt ctttatccta aaagttttaa cctcaggttc 2400
113 caaattcagt aaattttgga aacagtacag ctatttctca tcaattctct atcatgttga 2460
115 agtcaaattt ggattttcca ccaaattctg aatttgtaga catacttgta cgctcacttg 2520
117 ccccagatgc ctctctgtgc ctcatcttcc tctccacac aagcagtctt tttctacagc 2580
119 cagtaaggca gctctgtcgt ggtagcagat ggtcccactt attctagggt ctactcttt 2640
121 gtatgatgaa aagaatgtgt tatgaatcgg tgctgtcagc cctgctgtca gaccttcttc 2700
123 cacagcaaat gagatgtatg cccaaagcgg tagaattaaa gaagagtaaa atggctgttg 2760
125 aagcaaaaaa aaaaaaaaaa aaaaaaaaaa a 2791

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128 &lt;210&gt; SEQ ID NO: 2

129 &lt;211&gt; LENGTH: 467

130 &lt;212&gt; TYPE: PRT

131 &lt;213&gt; ORGANISM: Homo sapiens

133 &lt;400&gt; SEQUENCE: 2

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135 Met Thr Glu Leu Pro Ala Pro Leu Ser Tyr Phe Gln Asn Ala Gln Met
136 1 5 10 15
139 Ser Glu Asp Asn His Leu Ser Asn Thr Val Arg Ser Gln Asn Asp Asn
140 20 25 30
143 Arg Glu Arg Gln Glu His Asn Asp Arg Arg Ser Leu Gly His Pro Glu
144 35 40 45
147 Pro Leu Ser Asn Gly Arg Pro Gln Gly Asn Ser Arg Gln Val Val Glu
148 50 55 60
151 Gln Asp Glu Glu Glu Asp Glu Glu Leu Thr Leu Lys Tyr Gly Ala Lys
152 65 70 75 80
155 His Val Ile Met Leu Phe Val Pro Val Thr Leu Cys Met Val Val Val
156 85 90 95
159 Val Ala Thr Ile Lys Ser Val Ser Phe Tyr Thr Arg Lys Asp Gly Gln
160 100 105 110
163 Leu Ile Tyr Thr Pro Phe Thr Glu Asp Thr Glu Thr Val Gly Gln Arg
164 115 120 125
167 Ala Leu His Ser Ile Leu Asn Ala Ala Ile Met Ile Ser Val Ile Val
168 130 135 140
171 Val Met Thr Ile Leu Leu Val Val Leu Tyr Lys Tyr Arg Cys Tyr Lys
172 145 150 155 160

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175 Val Ile His Ala Trp Leu Ile Ile Ser Ser Leu Leu Leu Leu Phe Phe
176           165           170           175
179 Phe Ser Phe Ile Tyr Leu Gly Glu Val Phe Lys Thr Tyr Asn Val Ala
180           180           185           190
183 Val Asp Tyr Ile Thr Val Ala Leu Leu Ile Trp Asn Leu Gly Val Val
184           195           200           205
187 Gly Met Ile Ser Ile His Trp Lys Gly Pro Leu Arg Leu Gln Gln Ala
188           210           215           220
191 Tyr Leu Ile Met Ile Ser Ala Leu Met Ala Leu Val Phe Ile Lys Tyr
192 225           230           235           240
195 Leu Pro Glu Trp Thr Ala Trp Leu Ile Leu Ala Val Ile Ser Val Tyr
196           245           250           255
199 Asp Leu Val Ala Val Leu Cys Pro Lys Gly Pro Leu Arg Met Leu Val
200           260           265           270
203 Glu Thr Ala Gln Glu Arg Asn Glu Thr Leu Phe Pro Ala Leu Ile Tyr
204           275           280           285
207 Ser Ser Thr Met Val Trp Leu Val Asn Met Ala Glu Gly Asp Pro Glu
208           290           295           300
211 Ala Gln Arg Arg Val Ser Lys Asn Ser Lys Tyr Asn Ala Glu Ser Thr
212 305           310           315           320
215 Glu Arg Glu Ser Gln Asp Thr Val Ala Glu Asn Asp Asp Gly Gly Phe
216           325           330           335
219 Ser Glu Glu Trp Glu Ala Gln Arg Asp Ser His Leu Gly Pro His Arg
220           340           345           350
223 Ser Thr Pro Glu Ser Arg Ala Ala Val Gln Glu Leu Ser Ser Ser Ile
224           355           360           365
227 Leu Ala Gly Glu Asp Pro Glu Glu Arg Gly Val Lys Leu Gly Leu Gly
228           370           375           380
231 Asp Phe Ile Phe Tyr Ser Val Leu Val Gly Lys Ala Ser Ala Thr Ala
232 385           390           395           400
235 Ser Gly Asp Trp Asn Thr Thr Ile Ala Cys Phe Val Ala Ile Leu Ile
236           405           410           415
239 Gly Leu Cys Leu Thr Leu Leu Leu Leu Ala Ile Phe Lys Lys Ala Leu
240           420           425           430
243 Pro Ala Leu Pro Ile Ser Ile Thr Phe Gly Leu Val Phe Tyr Phe Ala
244           435           440           445
247 Thr Asp Tyr Leu Val Gln Pro Phe Met Asp Gln Leu Ala Phe His Gln
248           450           455           460
251 Phe Tyr Ile
252 465
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257 <212> TYPE: DNA
258 <213> ORGANISM: Mus musculus
260 <220> FEATURE:
261 <221> NAME/KEY: misc_feature
262 <222> LOCATION: (1)..(1929)
263 <223> OTHER INFORMATION: where n may be either a or g or c or t/u, unknown or other
266 <400> SEQUENCE: 3

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W--> 267 accanacanc ggcagctgag gcggaaacct aggctgagag ccggccgccc gggcgaggag 60
269 agagaaggaa ccaacacaag acagcagccc ttcgaggtct ttaggcagct tggaggagaa 120
271 cacatgagag aaagaatccc aagaggtttt gttttctttg agaaggtatt tctgtccagc 180
273 tgctccaatg acagagatac ctgcaccttt gtcctacttc cagaatgccc agatgtctga 240
275 ggacagccac tccagcagcg ccatccggag ccagaatgac agccaagaac ggcagcagca 300
277 gcatgacagg cagagacttg acaaccctga gccaatatct aatgggaggc cccagagtaa 360
279 ctcaagacag gtggtggaac aagatgagga ggaagacgaa gagctgacat tgaaatatgg 420
281 agccaagcat gtcacatgac tctttgtccc cgtgaccctc tgcaggtgctg tcgtcgtggc 480
283 caccatcaaa tcagtcagct tctatacccg gaaggacggt cagctaattct acacccatt 540
285 cacagaagac actgagactg taggccaaag agccctgcac tcgacctga atgcggccat 600
287 catgatcagt gtcattgtca ttatgacctt cctcctggtg gtcctgtata aatacagggtg 660
289 ctacaagggtc atccacgcct ggcttattat ttcatctctg ttgttgctgt tctttttttc 720
291 gttcatttac ttaggggaag tatttaagac ctacaatgtc kccgtggact acgttacagt 780
293 agcactccta atctggaatt ggggtgtggt cgggatgatt gccatccact ggaaaggccc 840
295 ccttcgactg cagcaggcgt atctcattat gatcagtgcc ctcatggccc tggattttat 900
297 caagtacctc cccgaatgga ccgcatggct catcttggct gtgatttcag tatatgattt 960
299 ggtggctgtt ttatgtccca aaggccact tcgtatgctg gttgaaacag ctcaaggaaag 1020
301 aaatgagact ctctttccag ctcttatcta ttctcaaca atggtgtggt tggatgaatat 1080
303 ggctgaagga gacccagaag cccaaaggag ggtacccaag aacccaagt ataacacaca 1140
305 aagagcggag agagagacac aggacagtgg ttctgggaac gatgatgggt gcttcagtga 1200
307 ggagtgggag gcccaaagag acagtcacct ggggcctcat cgtccactc ccgagtcaag 1260
309 agctgctgtc caggaacttt ctgggagcat tctaacgagt gaagaccgag aggaaagagg 1320
311 agtaaaactt ggactgggag atttcatttt ctacagtgtt ctggttggtg aggcctcagc 1380
313 aaccgccagt ggagactgga acacaacctt agcctgcttk gtagccatac tgatcggcct 1440
W--> 315 gtgccttana ttactcctgc tcgccattta caagaaaggg tngccagccc nccccatctc 1500
W--> 317 catcaccttc ggggtcgtgt tctncttcgc cacggattac cttgtgcagc ccttcattga 1560
319 ccaacttgca ttccatcagt tttatatcta gcctttctgc agttagaaca tggatgtttc 1620
321 ttctttgatt atcaaaaaca caaaaacaga gagcaagccc gaggaggaga ctggtgactt 1680
323 tcctgtgtcc tcagctaaca aaggcaggac tccagctgga cttctgcagc ttccttccga 1740
325 gtctccctag ccacccgcac tactggactg tggaaggaag cgtctacaga ggaacggttt 1800
327 ccaacatcca tcgctgcagc agacggtgtc cctcagtgtt ttgagagaca aggacaagga 1860
329 aatgtgctgg gccaaaggag tgccgtgctc tgctagcttt ggmccgtggg catggagatt 1920
331 taccgcac 1929
334 <210> SEQ ID NO: 4
335 <211> LENGTH: 467
336 <212> TYPE: PRT
337 <213> ORGANISM: Mus musculus
339 <220> FEATURE:
340 <221> NAME/KEY: MISC_FEATURE
341 <222> LOCATION: (1)..(467)
342 <223> OTHER INFORMATION: where X is unknown or other
345 <400> SEQUENCE: 4
347 Met Thr Glu Ile Pro Ala Pro Leu Ser Tyr Phe Gln Asn Ala Gln Met
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351 Ser Glu Asp Ser His Ser Ser Ser Ala Ile Arg Ser Gln Asn Asp Ser
352 20 25 30
355 Gln Glu Arg Gln Gln Gln His Asp Arg Gln Arg Leu Asp Asn Pro Glu
356 35 40 45
359 Pro Ile Ser Asn Gly Arg Pro Gln Ser Asn Ser Arg Gln Val Val Glu

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360      50      55      60
363 Gln Asp Glu Glu Glu Asp Glu Glu Leu Thr Leu Lys Tyr Gly Ala Lys
364 65      70      75      80
367 His Val Ile Met Leu Phe Val Pro Val Thr Leu Cys Met Val Val Val
368      85      90      95
371 Val Ala Thr Ile Lys Ser Val Ser Phe Tyr Thr Arg Lys Asp Gly Gln
372      100      105      110
375 Leu Ile Tyr Thr Pro Phe Thr Glu Asp Thr Glu Thr Val Gly Gln Arg
376      115      120      125
379 Ala Leu His Ser Ile Leu Asn Ala Ala Ile Met Ile Ser Val Ile Val
380      130      135      140
383 Ile Met Thr Ile Leu Leu Val Val Leu Tyr Lys Tyr Arg Cys Tyr Lys
384 145      150      155      160
387 Val Ile His Ala Trp Leu Ile Ile Ser Ser Leu Leu Leu Leu Phe Phe
388      165      170      175
W--> 391 Phe Ser Phe Ile Tyr Leu Gly Glu Val Phe Lys Thr Tyr Asn Val Xaa
392      180      185      190
395 Val Asp Tyr Val Thr Val Ala Leu Leu Ile Trp Asn Trp Gly Val Val
396      195      200      205
399 Gly Met Ile Ala Ile His Trp Lys Gly Pro Leu Arg Leu Gln Gln Ala
400      210      215      220
403 Tyr Leu Ile Met Ile Ser Ala Leu Met Ala Leu Val Phe Ile Lys Tyr
404 225      230      235      240
407 Leu Pro Glu Trp Thr Ala Trp Leu Ile Leu Ala Val Ile Ser Val Tyr
408      245      250      255
411 Asp Leu Val Ala Val Leu Cys Pro Lys Gly Pro Leu Arg Met Leu Val
412      260      265      270
415 Glu Thr Ala Gln Glu Arg Asn Glu Thr Leu Phe Pro Ala Leu Ile Tyr
416      275      280      285
419 Ser Ser Thr Met Val Trp Leu Val Asn Met Ala Glu Gly Asp Pro Glu
420      290      295      300
423 Ala Gln Arg Arg Val Pro Lys Asn Pro Lys Tyr Asn Thr Gln Arg Ala
424 305      310      315      320
427 Glu Arg Glu Thr Gln Asp Ser Gly Ser Gly Asn Asp Asp Gly Gly Phe
428      325      330      335
431 Ser Glu Glu Trp Glu Ala Gln Arg Asp Ser His Leu Gly Pro His Arg
432      340      345      350
435 Ser Thr Pro Glu Ser Arg Ala Ala Val Gln Glu Leu Ser Gly Ser Ile
436      355      360      365
439 Leu Thr Ser Glu Asp Pro Glu Glu Arg Gly Val Lys Leu Gly Leu Gly
440      370      375      380
443 Asp Phe Ile Phe Tyr Ser Val Leu Val Gly Lys Ala Ser Ala Thr Ala
444 385      390      395      400
W--> 447 Ser Gly Asp Trp Asn Thr Thr Ile Ala Cys Xaa Val Ala Ile Leu Ile
448      405      410      415
W--> 451 Gly Leu Cys Leu Xaa Leu Leu Leu Leu Ala Ile Tyr Lys Lys Gly Xaa
452      420      425      430
W--> 455 Pro Ala Xaa Pro Ile Ser Ile Thr Phe Gly Phe Val Phe Xaa Phe Ala
456      435      440      445

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RAW SEQUENCE LISTING ERROR SUMMARY  
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Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

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Seq#:3; N Pos. 5,9,1449,1482,1491,1524  
Seq#:4; Xaa Pos. 192,411,421,432,435,446  
Seq#:5; N Pos. 360  
Seq#:6; N Pos. 4,8,23,42,45,60,68,174,182,239,383,488,525,939  
Seq#:7; N Pos. 169,235,267,277,321,348,354,379,422  
Seq#:8; N Pos. 52,133  
Seq#:9; N Pos. 263,297,302,312,320,346,355,572,843,890,914,931,991,1119  
Seq#:9; N Pos. 1184,1314,1331,1359,1362,1370,1418,1479,1509,1587,1592,1598  
Seq#:9; N Pos. 1601,1612,1652,1668,1704,1711  
Seq#:10; N Pos. 2,26,28,64,65,85,329,605,777,824,833,1031,1104,1151,1218  
Seq#:10; N Pos. 1238,1239,1300,1650,1798,1810,1834,1844  
Seq#:11; N Pos. 22,26,44,47,49,68,81,104,107,119,125,131,137,150,184,188  
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Seq#:11; N Pos. 691,763,776,789,799,807  
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Seq#:16; N Pos. 394,402,403,409,416,424,427,452  
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Seq#:20; N Pos. 5,15,26,28,47,70,104,108,122,124,156,182,184,194,203,217  
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Seq#:30; N Pos. 292,305,326  
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RAW SEQUENCE LISTING ERROR SUMMARY  
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Seq#:35; N Pos. 22,83,205  
Seq#:36; N Pos. 135,138,145,150,162,180,196,200,243,250,311,319,347,359,366  
Seq#:36; N Pos. 374,393  
Seq#:37; N Pos. 24,52,81,83,105,121,129,132,147,158,183,209,219,226,257,275  
Seq#:37; N Pos. 301,316  
Seq#:38; N Pos. 177,349,374,492,552,558,561,585,643,650,666,675,706,718,732  
Seq#:38; N Pos. 740,746,756  
Seq#:39; N Pos. 19,48,49,52,57,62,77,81,107,111,113,116,123,144,154,175,181  
Seq#:39; N Pos. 182,186,189,190,197,198,209,211,213,216,219,222,234,244,263  
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Seq#:42; N Pos. 20,28,32,61,69,91,95,117,120,131,140,146  
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Seq#:43; N Pos. 559,570  
Seq#:44; N Pos. 11,32,238,247,296,309,315,329  
Seq#:45; N Pos. 52,133,160,284,371,373,383,389,390,406,419  
Seq#:46; N Pos. 12,88,185,235,269,301,309,315,319,334,364,379,385  
Seq#:47; N Pos. 3,19,22,32,50,91,92,124,166,171,175,192,212,258,278,303,305  
Seq#:47; N Pos. 325,335,354,357,369,375,422,446,471,479,483  
Seq#:48; N Pos. 12,13,70,120,129,166,177,233,234,291,347,348,372,426  
Seq#:49; N Pos. 64,110,117,170,257,306,315,330,336,353,365  
Seq#:50; N Pos. 19,64,163,225,283,301,373,409,440,443,453,471,475,482,484  
Seq#:51; N Pos. 58,59  
Seq#:52; N Pos. 204  
Seq#:53; N Pos. 8,69,125,126,177,265,314,338,361  
Seq#:54; N Pos. 213,225,240,248,260,296,318,330,368,402,494,500,514,518  
Seq#:55; N Pos. 6,16,19,25,28,52,73,109,190,192,206,232,246,248,275,283,292  
Seq#:55; N Pos. 308,338,389,390,391,416,423,502,515  
Seq#:56; N Pos. 40,166,253,377,379,383,402,418,437,451,484  
Seq#:57; N Pos. 7,147,258,272,305,306,358,374,389,402,413,423,424,426,472  
Seq#:58; N Pos. 78,243,289,345,365,380,386,402,408,409,410,411  
Seq#:59; N Pos. 40,253,301,335,361,379,384,397,404,412,418,425,427,436,455  
Seq#:59; N Pos. 461,494,509  
Seq#:60; N Pos. 11,150,241,242,367  
Seq#:61; N Pos. 356,358,363  
Seq#:62; N Pos. 11,116,260,317,325,361,431,439,445,457,476,491,495  
Seq#:63; N Pos. 13,262,319,433,456  
Seq#:64; N Pos. 30,365,368  
Seq#:65; N Pos. 199,223,233,238,256,282,291  
Seq#:66; N Pos. 7,130,178,197,305,332,339,356,380,415,422,433,436,440  
Seq#:67; N Pos. 289,345,356,407,421,428,433,434,441,443,446  
Seq#:68; N Pos. 4,45,57,309,310,311,347,369  
Seq#:69; N Pos. 88,192,253,283,361,366,372,375,386,426,442,478,485  
Seq#:70; N Pos. 390,400  
Seq#:71; N Pos. 45,385,413,416,424

RAW SEQUENCE LISTING ERROR SUMMARY  
PATENT APPLICATION: US/09/689,159A

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Input Set : A:\Sequence Listing (ASCII copy) - US7.txt  
Output Set: N:\CRF4\12312002\I689159A.raw

Seq#:72; N Pos. 60,92,101,138,160,234,255,263,270,284,297,298  
Seq#:73; N Pos. 135,148,157,158,163,169,235,267,277,321,348,354,379,422  
Seq#:74; N Pos. 7,23,36,48,67,445  
Seq#:75; N Pos. 7,389  
Seq#:76; N Pos. 52,94,104,304,325,401,448  
Seq#:77; N Pos. 101,102,132,228,396,419,439,445,467  
Seq#:78; N Pos. 53,54,115  
Seq#:79; N Pos. 49,236,270,434,443,490  
Seq#:80; N Pos. 14,285,407,472  
Seq#:81; N Pos. 5,159,189,190,191,307,319,343,353  
Seq#:82; N Pos. 33,53,72,81,83,87,124,188,191,233,367,401,416,422,424,439  
Seq#:82; N Pos. 460,471,480,492  
Seq#:83; N Pos. 54,75,257,295,333,386,409,411,414,447  
Seq#:84; N Pos. 18,139,157,170,178,230,257,277,363,373,388,437  
Seq#:85; N Pos. 292,312,351  
Seq#:86; N Pos. 199,446,483  
Seq#:87; N Pos. 392,399,439  
Seq#:88; N Pos. 469,487,500  
Seq#:89; N Pos. 49,114,302,319,343,367,470,484  
Seq#:90; N Pos. 12,20,24,124,155,262,293,299,374,392,419,426,431,458,467  
Seq#:90; N Pos. 475,485,486,488,490,491,494  
Seq#:91; N Pos. 56,139,418,438,439,475,477,501  
Seq#:92; N Pos. 109  
Seq#:93; N Pos. 30,479,484  
Seq#:94; N Pos. 53,145,204,260,266,283,305,318,337,339,342,360,364  
Seq#:95; N Pos. 25,26,77,78,142,164,166,179,232,264,277,295,310  
Seq#:96; N Pos. 6,25,33,68,123,131,165,183,201,202,227,267,273,282,304,309  
Seq#:96; N Pos. 310,315,319,326,342,347,362,367,370,371  
Seq#:97; N Pos. 47,149,182,249,250,277,280,340,345  
Seq#:98; N Pos. 25,159,162,165,196  
Seq#:99; N Pos. 282,369,374,421  
Seq#:100; N Pos. 23,39,44,65,68,84,141,142,179,208,246,276,283,308,380,393  
Seq#:100; N Pos. 406,416,424  
Seq#:101; N Pos. 252,409,434  
Seq#:102; N Pos. 84,146,240,335,414  
Seq#:103; N Pos. 144,171,172,217,219,270,315,352,353,358,359,362,369  
Seq#:104; N Pos. 222  
Seq#:105; N Pos. 84,230,269,283,353,356,371,382,390,407,411  
Seq#:106; N Pos. 190,348,421,439  
Seq#:107; N Pos. 145,157,168,180,183,184,189  
Seq#:108; N Pos. 216,419,471  
Seq#:109; N Pos. 94,96,120,122,359,388,432,459  
Seq#:110; N Pos. 24,27,89,288,392,476,482  
Seq#:111; N Pos. 97,122,190,191,192,307,324,449,475,480,496,499,520,523,539  
Seq#:112; N Pos. 1,2,6,8,10,11,12,13,14,15,16,17,20,21,23,43,70,73,98  
Seq#:113; N Pos. 8,11,12,13,14,15,20,21,44,341,372,415,429,464,496,526,588  
Seq#:113; N Pos. 637,640,664,674,680,681,686,689,692,696,703,709,730,733  
Seq#:113; N Pos. 740,755,767,773,781,786,795,801,805,818,819,829  
Seq#:114; N Pos. 7,9,20,28,30,33,37,43,45,46,47,51,53,54,70,96,109,115,116



RAW SEQUENCE LISTING ERROR SUMMARY  
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TIME: 14:09:12

Input Set : A:\Sequence Listing (ASCII copy) - US7.txt  
Output Set : N:\CRF4\12312002\I689159A.raw

Seq#:114; N Pos. 120,127,135,140,153,157,158,168,171,182,183,186,190,193  
Seq#:114; N Pos. 196,198,211,214,217,219,220,221,225,227,230,231,234,239  
Seq#:114; N Pos. 243,244,253,254,256,262,263,264,274,275,277,278,289,292  
Seq#:114; N Pos. 293,301,303,312,316,317,322,323,324,326,327,328,331,335  
Seq#:114; N Pos. 340,347,349,351,353,354,356,357,362,363,364,366,367,368  
Seq#:114; N Pos. 369,371,373,375,378,380,384,389,390,391,392,394,395,396  
Seq#:114; N Pos. 398,401,402,403,405,407,408,413,418,420,422,428,429,431  
Seq#:114; N Pos. 433,434,436,439,440,442,449,451,456,458,459,468,469,471  
Seq#:114; N Pos. 472,473,475,484,486,490,492,493,495,497,498,500,503,505  
Seq#:114; N Pos. 506,508,517,518,529,531,539,541,546,549,552,553,557,561  
Seq#:114; N Pos. 565,567,568,572,573,582,588,589,602,608,611,614,618,619  
Seq#:114; N Pos. 622,626,631,635,636,639,640,643,648,652,655,660,661,664  
Seq#:114; N Pos. 666,678,682,688,692,696,698,699,700,709,715,717,718,719  
Seq#:114; N Pos. 723,724,725,726,731,733,734,740,745,747,750,751,756,764  
Seq#:114; N Pos. 768,775,777,778,780,781,787,788,789,790,793,794,796,797  
Seq#:114; N Pos. 798,804,806,809,810,812,813,814,815,818,820,827,829,831  
Seq#:114; N Pos. 833,834  
Seq#:115; N Pos. 33,39,65,418,478,487,522,543,546,565,566,570,578,579,580  
Seq#:115; N Pos. 588,592,598,599,602,606,610,611,620,642,678,697,704,705  
Seq#:115; N Pos. 706,707,708,709,710,711,712,713,714,715,716,717,718,719  
Seq#:115; N Pos. 721,723,724,726,727,729,731,732,733,736,737,739,740,741  
Seq#:115; N Pos. 742,743,749,750,751,752,754,755,756,757,761,762,763,766  
Seq#:115; N Pos. 767,768,769,770,771,773,774,775,776,777,778,780,781,782  
Seq#:115; N Pos. 783,786,789,791,792,793,795,797,798,799,800  
Seq#:116; N Pos. 2,3,4,5,6,7,8,12,13,15,19,216,421,443,444,464,475,478,481  
Seq#:116; N Pos. 483,486,487,489,491,494,499,507,512,518,526,531,542,550  
Seq#:116; N Pos. 554,557,560,564,572,577,582,583,588,591,592,593,594,597  
Seq#:116; N Pos. 599,601,602,604,606,608,609,613,614,615,620,621,622,624  
Seq#:116; N Pos. 630,631,632,636,641,642,647,649,653,654,655,656,660,665  
Seq#:116; N Pos. 666,667,669,670,671,672,673,674,678,681,684,686,689,690  
Seq#:116; N Pos. 691,692,695,697,698,699,700,701,703,704,705,706,707,708  
Seq#:116; N Pos. 709,712,716,717,720,721,722,724,727,729,730,732,733,735  
Seq#:116; N Pos. 736,738,739,740,741,742,744,745,746,747,748,749,750,751  
Seq#:116; N Pos. 752,755,757,758,759,761,762,763,764,765,766,767,768,771  
Seq#:116; N Pos. 772,773,774,775,776  
Seq#:117; N Pos. 1,2,3,4,5,6,7,8,9,12,13,14,15,16,17,22,23,30,34,126,265  
Seq#:117; N Pos. 396,403,404,607,631,632,641,660,669,671,673,685,691,699  
Seq#:117; N Pos. 710,721,724,729,734,759,768,784,792,794  
Seq#:118; N Pos. 2,5,6,7,8,10,11,12,13,14,15,22,27,253,444,476,516,538,547  
Seq#:118; N Pos. 553,590,634,676,697,707,729,742,748,774,798,811,818  
Seq#:119; N Pos. 2,502,607,656,674,680,696,719,738,739,748,749,750,765,766  
Seq#:119; N Pos. 770,784,794  
Seq#:120; N Pos. 11,18,55,67,72,132,532,559,594,614,624,660,665,672,730,734  
Seq#:120; N Pos. 747,755,777,778,779,783  
Seq#:121; N Pos. 170,376,515,572,628,693,718,724,725,756,761,776,778,791  
Seq#:122; N Pos. 130,143,152,153,158,164,230,262,272,316,343,349,374,417  
Seq#:123; N Pos. 11,35,155,336,402,435,441,443  
Seq#:124; N Pos. 119,123,164,178,186,212,261,304,318,322,332,348,351,364  
Seq#:125; N Pos. 52,133

RAW SEQUENCE LISTING ERROR SUMMARY  
PATENT APPLICATION: US/09/689,159ADATE: 12/31/2002  
TIME: 14:09:12Input Set : A:\Sequence Listing (ASCII copy) - US7.txt  
Output Set: N:\CRF4\12312002\I689159A.raw

Seq#:135; N Pos. 5,9  
Seq#:136; Xaa Pos. 192,411,421,432,435,446  
Seq#:137; N Pos. 2137,2144,2152,2157,2160,2163,2180,2203,2213,2216,2225  
Seq#:150; N Pos. 12,532,576,592,626,634,643,777,805,808,811,877,909,919,963  
Seq#:150; N Pos. 990,996,1021,1064  
Seq#:151; N Pos. 94,159,172,254,268,276,385,676  
Seq#:152; N Pos. 263,297,302,312,320,346,355,572,843,890,914,931,991,1119  
Seq#:152; N Pos. 1184,1314,1331,1359,1362,1370,1418,1479,1509,1587,1592  
Seq#:152; N Pos. 1598,1601,1612,1652,1668,1704,1711  
Seq#:153; N Pos. 2,26,28,64,65,85,329,605,777,824,833,1031,1104,1151,1218  
Seq#:153; N Pos. 1238,1239,1300,1650,1798,1810,1834,1844  
Seq#:154; N Pos. 121,138,161,165,181,239,295,662,744,747,748,751,898,903  
Seq#:154; N Pos. 1502,1803,1850,1852,1921,1935  
Seq#:156; N Pos. 144,145,157,168,171,172,217,219,270,315,347,356,357,363  
Seq#:156; N Pos. 364,367,372,374,529,536,676,681,755,804,822,916,929,987  
Seq#:156; N Pos. 1004,1014,1067,1094,1116  
Seq#:157; N Pos. 97,122,190,191,192,307,327,448,474,479,495,498,519,522,538  
Seq#:158; N Pos. 8,46,161,170,182,213,234,238,250,291,312,325,337,364,433  
Seq#:158; N Pos. 434,435  
Seq#:159; N Pos. 22,26,44,47,49,68,81,104,107,119,125,131,137,150,184,188  
Seq#:159; N Pos. 237,248,250,252,274,338,339,340,524,525,562,591,629,659  
Seq#:159; N Pos. 666,691,763,776,789,799,807  
Seq#:160; N Pos. 4,8,23,42,45,60,68,174,182,239,383,488,525,939  
Seq#:179; N Pos. 20  
Seq#:181; N Pos. 13,16  
Seq#:182; N Pos. 14  
Seq#:184; N Pos. 2,4,5,6,7,8,9,10,11,12,13,14,15,16,17,22,34,58,67,173  
Seq#:185; N Pos. 3,4,5,6,7,8,9,10,11,16,36,59,71,173,182,190,204

## VERIFICATION SUMMARY

DATE: 12/31/2002

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Input Set : A:\Sequence Listing (ASCII copy) - US7.txt

Output Set : N:\CRF4\12312002\I689159A.raw

L:35 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:60  
L:267 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:0  
L:315 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:1440  
L:317 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:1500  
L:391 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:176  
L:447 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:400  
L:451 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:416  
L:455 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:432  
L:489 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5 after pos.:300  
L:596 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6 after pos.:0  
L:598 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6 after pos.:60  
L:600 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6 after pos.:120  
L:602 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6 after pos.:180  
L:608 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6 after pos.:360  
L:612 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6 after pos.:480  
L:626 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6 after pos.:900  
L:645 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:7 after pos.:120  
L:647 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:7 after pos.:180  
L:649 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:7 after pos.:240  
L:651 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:7 after pos.:300  
L:653 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:7 after pos.:360  
L:655 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:7 after pos.:420  
L:670 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:8 after pos.:0  
L:674 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:8 after pos.:120  
L:709 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9 after pos.:240  
L:711 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9 after pos.:300  
L:719 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9 after pos.:540  
L:729 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9 after pos.:840  
L:731 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9 after pos.:900  
L:733 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9 after pos.:960  
L:737 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9 after pos.:1080  
L:739 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9 after pos.:1140  
L:743 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9 after pos.:1260  
L:745 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9 after pos.:1320  
L:747 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9 after pos.:1380  
L:749 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9 after pos.:1440  
L:751 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9 after pos.:1500  
L:753 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9 after pos.:1560  
L:755 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9 after pos.:1620  
L:757 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9 after pos.:1680  
L:772 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:10 after pos.:0  
L:774 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:10 after pos.:60  
L:782 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:10 after pos.:300  
L:792 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:10 after pos.:600  
L:796 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:10 after pos.:720  
L:798 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:10 after pos.:780  
L:806 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:10 after pos.:1020  
L:808 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:10 after pos.:1080

VERIFICATION SUMMARY

DATE: 12/31/2002

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Input Set : A:\Sequence Listing (ASCII copy) - US7.txt

Output Set: N:\CRF4\12312002\I689159A.raw

L:810 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:10 after pos.:1140

L:812 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:10 after pos.:1200